NOTES.

We regret to see the announcement that Sir Benjamin Baker, K.C.B., F.R.S., died suddenly on Sunday, May 19, in his sixty-seventh year. We have also to deplore the death of Sir Joseph Fayrer, K.C.S.I., F.R.S., on Tuesday, May 21, at eighty-two years of age.

M. de Lapparent has been elected permanent secretary of the Paris Academy of Sciences in succession to the late M. Berthelot.

The second annual meeting of the American Association of Museums will be held at the Carnegie Institute in Pittsburg on June 4–6.

The *Observer* states that the honorary freedom of the City of London is to be conferred on Lord Lister. The proposal will come formally before the Corporation probably at its first meeting after the Whitsun recess.

The section of geology and geography of the American Association for the Advancement of Science will hold a summer field meeting from July 3 to July 10 in New York State in the region between Lake Champlain and the Adirondacks.

An exhibition of reflex cameras at present on the market, and of photographs illustrating the use of reflex cameras, is to be opened at the house of the *British Journal of Photography* on June 13, and will remain open until July 6.

The will of Mr. C. T. Yerkes, who died at New York on December 29, 1905, has just been made known. The testator bequeathed 20,000*l.* for the upkeep of the observatory at Lake Geneva, Wisconsin, to the University of Chicago, with the condition that the observatory shall always be known as the Yerkes Observatory.

Dr. W. S. Bruce is organising an Arctic expedition, with the special object of completing the exploration of Prince Charles Foreland, Spitsbergen, which he began last summer, in company with the Prince of Monaco, in the *Princess Alice*. The expedition will proceed in the first instance to Tromsoe, in Norway, and from there to Spitsbergen, in a specially chartered steamer.

The German steamship companies Norddeutscher Lloyd and the Hamburg-Amerika Linie will allow a reduction for passage tickets on different lines to members attending the fourteenth International Congress for Hygiene and Demography to be held at Berlin next September. The office of the Hamburg-Amerika Linie in Berlin has undertaken to procure rooms in different hotels for members of the congress. Detailed information concerning the reduction in price for tickets, and means of communication with Berlin, will shortly be published, and is obtainable at the bureau of the congress, Berlin 9 W., Eichhornstr. 9.

On Tuesday next, May 28, Prof. G. H. F. Nuttall will deliver the first of two lectures at the Royal Institution on "Malaria, Sleeping Sickness, Tick Fever, and Allied Diseases," and on Saturday, June 1, Sir William White will begin a course of two lectures on "The Contest between Guns and Armour." The Friday evening discourse on May 31 will be delivered by Mr. A. Henry Savage Landor, on "Recent Journey Across Africa," and on June 7 by Sir James Dewar, on "Studies in High Vacua and Helium at Low Temperatures."

On Friday afternoon, May 17, an earth tremor—possibly due to some shift of strata not wholly unconnected with extensive mining operations—took place in the Rhondda Valley, Glamorgan, and is described by those who felt it as more severe than last year's earthquake. The vibration was very distinctly felt by the miners underground, who estimated its duration at half a minute. Householders also felt the shock, and noticed crockery rattle. The vibration was not noticed anywhere else in South Wales. Similar local shocks have been felt before, notably one in the same spot on October 16, 1896.

In a letter published in the *Times* of May 18, Sir James Blyth suggests the formation of an Imperial Council to continue and elaborate the work which has, with the end of the Colonial Conference, been suspended for a time. Among the subjects calling for investigation by such an Imperial Council, Sir James Blyth includes, with many others, State-aided organisation, where needed, of agricultural activities, such as the improvement of the breeds of cattle and horses, dairy, forestry, seed selection and supply, and the promotion of technical and scientific education, with the endowment of research, in both of which we are greatly behind other nations. This permanent Imperial Council would "act as eyes and ears to the Empire as a whole," and would greatly assist scientific procedure in government.

The Pasteur Institute of South India at Coonoor was opened, the *Pioneer Mail* states, by Sir Arthur Lawley, Governor of Madras, on April 25. The Governor, in the course of a short address, sketched the history of the institute, and said that Lord Ampthill was the originator of the scheme. The consummation of the work was due to the generosity of an American millionaire, Mr. Henry Phipps, who placed one lakh of rupees at the disposal of the Madras Government. The institute will involve annually considerable expense; and the Indian Government has undertaken to bear the chief part of this, but the committee of the institute and the Government look for support to the public and the neighbouring States. His Highness the Nizam of Hyderabad has set an example of generosity by promising, for at least ten years, to give a substantial contribution to the annual expense.

The cold days of May have this year been more than usually pronounced, and for five consecutive days, from May 17 to May 21, the shade temperature in London did not exceed 55°, while on May 19 and 20—Whit Sunday and Monday—the maximum temperature was 51°, or about 15° below the average. The observations of past years commonly show low day temperatures after the middle of the month, although the occurrence is not sufficiently frequent to be exhibited in any marked manner in the mean readings for any considerable number of years. In London and in many parts of England night frosts were frequently registered by the exposed thermometer during the past week, and a very keen north and north-east wind was blowing. The cold snap was more severely felt, following so closely on brighter and warmer weather; the shade temperature in London on May 12 was 28° higher than on May 19 and 20.

With the object of bringing the Smithsonian Institution at Washington into closer touch with the representative national scientific organisations of the United States and to create a new channel for the diffusion of knowledge, the secretary of the institution, Mr. Charles D. Walcott, recently sent an invitation to the National Academy of Sciences and to the American Association for the Advancement of Science to make the Smithsonian Institution their headquarters. The authorities of both the National Academy and the American Association have accepted the offer with thanks, and the step taken will assist greatly to make the Smithsonian Institution a clearing-house of national scientific learning for the United States.

In connection with the second centenary celebration of the birth of Linnæus, the opening article of the April number of *Naturen* is devoted to a sketch of the life and work of the great naturalist, by Mr. J. Holmboe. It is illustrated by reproductions of Hoffman's portrait and C. F. Inlander's medallion.

The practical work of the members of the Australian Ornithologists' Union during the sixth congress, held last November and December in exploiting the bird-life of Mount Wellington, Tasmania, forms the subject of the chief article in the April number of the *Emu*. Among the illustrations to this article is one of a group of Eucalyptus trees showing the manner in which the great black cockatoo strips off the bark in long streamers in order to feed upon the grubs of certain bark-burrowing insects. It is stated that only dead timber is attacked by the cockatoos, which are thus exceedingly useful in keeping in check insects injurious to the forests.

Insects injurious to barley and other grain when in store form the subject of a paper by Mr. W. E. Collinge published in the Journal of the Institute of Brewing, vol. xiii., No. 3. The statement, on the authority of Miss Ormerod, that in the winter of 1884–5 a sum of between 1000*l.* and 2000*l.* was lost on a single cargo of Russian barley by the ravages of *Calandra granaria* gives an idea of the magnitude of the evil, and the list of five-and-twenty injurious species given by the author serves to emphasise the seriousness of the situation. Worse still is the statement that the number of species and of individuals of such pests has notably increased in this country during the last few years. Gauze-covered windows, cleanliness, and fumigation with carbon disulphide are the chief remedies suggested by the author.

In a paper on the so-called renal portal system, published in the April issue of the Proceedings of the Zoological Society of London, Mr. W. Woodland concludes that the structures thus called are misnamed, and that there is really no "portal system" connected with the kidneys. He accordingly proposes to replace the terms "renal portal system" and "renal portal vein" by "renal cardinal meshwork" and "post-renal vein." As the renal cardinal meshwork appears to have no excretory function, the association of kidney and vein is probably functionless, and thus, in a sense, accidental. The meshwork seems, in fact, to be merely "an instance of the extension of a growing organ in the direction of least resistance; in other words, a mechanical product having no direct relation to the physiological needs of the animal."

The *Popular Science Review* for May contains the first connected account of the Jamaica earthquake which has reached us. From this description, by Prof. C. W. Brown, we learn that the earthquake was not remarkable for its violence, as this is not put at higher than 9·5 degrees; of what scale is not stated, but whichever was used, this is far short of that attained by really great earthquakes. The shock, as distinguished from the damage, was not so localised as appeared from telegraphic accounts; there seem to have been independent centres, of lesser violence, on land, and the submarine cable was broken at two places, about four and about twenty miles from Bull Bay, a couple of miles or so of cable being so thickly covered with débris that they had to be abandoned. At several places along the edge of the harbour the bottom has sunk from its old level, the maximum difference being more than six fathoms, but this subsidence was confined to a belt of from a hundred to three hundred yards in breadth, surrounding the harbour and located on the shore or slightly off shore; the middle portion of the harbour and the entrance channel were unchanged.

One of the principal functions of the International Association of Botanists is to provide critical notices of papers and books on botany in their journal, the *Botanisches Centralblatt*. An extension of this review work has given rise to the "Progressus Rei Botanicæ" for the publication of summaries prepared by acknowledged authorities in different branches of botany. The first part, issued in November, 1906, contained articles by Prof. E. Strasburger, on cytology; by Dr. D. H. Scott, on Palæozoic botany; and by Dr. C. Flahault, on botanical geography. The second part, lately received, also contains three articles. Dr. L. Laurent reviews the progress of palæobotany with reference to angiosperms, Mr. W. Bateson deals with the subject of genetics, and Dr. F. Czapek writes on the physiology of nutrition. With regard to Dr. Laurent's contribution, he explains that it is concerned with the development of the angiosperms in the Cretaceous and Tertiary periods. Besides recording new observations, the author discusses methods employed and the general trend of results. A noticeable feature of Mr. Bateson's review is the general combination of zoological and botanical facts. Dr. Czapek starts from the date of the publication of the first volume of Pfeffer's "Plant Physiology," and follows that author in his arrangement. Among the subjects receiving special notice are the water-current in plants, methods of absorption, assimilation of carbohydrates and enzymes.

A monthly list of the publications of the U.S. Department of Agriculture is sent to all who apply for it, and is received by us. The activity of the department in obtaining information upon every branch of scientific agriculture and making it available in reports, bulletins, circulars, and other publications, issued at the nominal price of a few cents, is really remarkable. The monthly list now before us is a six-page leaflet containing the titles of many publications of importance, and including as new no fewer than nineteen bulletins, twenty-one circulars, and two farmers' bulletins on flax culture and experiment-station work. Our Board of Agriculture and Fisheries issues many useful leaflets, but its work cannot be compared with that of the United States Department of Agriculture, which is continually obtaining new knowledge. It could not be otherwise under the present conditions; for while a few hundred pounds a year represent the contribution our Board is able to make for agricultural research, the expenditure on investigations under the U.S. Department of Agriculture amounts to more than two hundred thousand pounds annually, exclusive of salaries of permanent officials and expenses of publications. Our politicians profess regard for British agriculture, but they do nothing to provide for the development of the knowledge which is even more necessary in the old country than it is in the new.

Dr. V. Conrad made some interesting experiments on the ionisation of the air at the Säntis Observatory, Switzerland (altitude 8200 feet), in August, 1905, the results of which are published in the Proceedings of the Vienna Academy for July 12, 1906. The author found that the daily variation in the amount of positive ions exhibited quite a different type from that of the negative ions. The daily range of the amount of positive ionisation showed a principal maximum at 11h. a.m., that of the negative at 3h. a.m. The minima agreed fairly well in time, the positive occurring at 3h. p.m. and the negative at 2h. p.m. A secondary maximum of the positive at 4h. a.m. occurred near the time of the principal negative maximum, while a secondary maximum of the negative, at 11h. a.m., occurred at the time of the principal positive maximum.

IN *Meteorologische Zeitschrift* (No. 12, 1906) Dr. A. de Quervain urges several arguments in favour of the real existence of the inversion of temperature at the height of 8–13 kilometres, upon which doubt has been thrown by several persons. M. Teisserenc de Bort instituted a number of ascents at Trappes (near Paris) during the night or early morning, so that the unmanned balloons might reach their greatest heights before sunrise, which seem to show without doubt the real existence of the inversion. Dr. de Quervain points out that in the international ascents made during the daytime at Strassburg, St. Petersburg, and Zürich (as well as other places), every possible care has been taken to eliminate the effect of radiation, and that the results also fully support the reality of the inversion. There is also the fact that a stratum of air is frequently found above the inversion zone, where the temperature again decreases decidedly with increasing altitude.

WE have frequently had occasion to refer to the useful work of the Zi-ka-wei Observatory, near Shanghai, in issuing timely notice of the approach of dangerous storms. At the present time it receives telegraphic reports from several of the Chinese stations, and telegrams twice or thrice daily from thirty-two foreign stations, obligingly forwarded with the consent of their respective Governments. Telegraphic storm warnings are sent from Zi-ka-wei to some fifteen of the principal Chinese ports, nearly all of which have semaphores which exhibit storm signals; notices are also transmitted to Vladivostock, Tokio, Formosa, and Indo-China. The Inspector-General of Chinese Customs has, at the urgent request of the director of the observatory, further sanctioned the erection of semaphores at twenty-five selected lighthouses not yet electrically connected, to which, from May, 1907—about the time of the beginning of the typhoon season—captains of ships leaving port are invited to repeat, during the daytime, the warning notices they have seen in the harbours for the benefit of the fishing and other small craft in the offing.

IN view of the approaching tercentenary of the discovery of logarithms, Dr. F. H. Loud contributes a note to the semi-annual Bulletin of the Colorado College Observatory in which he proposes several rapidly converging series, and shows how they might be used for the re-calculation of logarithms to a large number of decimal places. A table is given of logarithms of primes below 110 to eighteen places.

MR. CHARLES URBAN issues a pamphlet recommending the use of the kinematograph for scientific and educational purposes. He has published a large number of rolls demonstrating living objects, such as pond life as seen through the microscope, and it is suggested, among other uses, that the kinematograph may be applied to take records of important surgical operations for future use in class demonstration, and also to exhibit to medical students the details of experiments on living animals without repeating the actual experiments before every fresh batch of students.

PROF. E. WIEDEMANN is well known for many contributions he has made to the subject of Arabian astronomy. In a recent communication to the Physikalisch-Medizinischen Society of Erlangen he gives the translation of a paper from the Qâsid al Irschad, "Guide to the Aspiring," to which his attention had been directed by Prof. Nallino, of Palermo. The original author, who seems to have been indifferently known as al Ansârî or al Sachâwî, was a competent exponent of the astronomy of his day. Astronomy he describes as the science which teaches the nature of separate bodies, their figures and positions, the distances between them, the motions of the planets, and the magnitude of the heavenly bodies. Four fundamental parts are recognised. In the first is investigated what is common to all spheres or orbits, the words seem to have the same significance, to the relations between them, and the proof that they all move, the earth remaining at rest. In the second is demonstrated the character of the motions of the heavenly bodies, how many there are, the divisions of the zodiac, and the phenomena of the eclipses. The third treats of the earth and of the climate in different places, and of the differing lengths of the day and night according to latitude. The fourth part considers the magnitude and the distances of the stars. References are made to classical works in which these subjects can be studied at greater length. Further subdivisions follow, having reference to the calculation of ephemerides, the calendar, the method of observing, the projection of the sphere, and problems connected with the gnomon. Into these it is scarcely necessary to follow either the learned Arabian or his able translator. The paper is interesting, but its scientific value is mainly confined to the elaborate notes with which the author has enriched his translation. These notes are both philological and historical.

STUDENTS of the early history of science will find an elaborate and interesting discussion of Petrus Peregrinus de Maricourt's "Epistola de Magnete," by Prof. S. P. Thompson, in vol. ii. of the Proceedings of the British Academy. Petrus Peregrinus, we learn, was a native of Picardy, a friend of Roger Bacon, and a man of very varied knowledge for his time. The "Epistola" is believed to have been written in August, 1269, while its author was assisting in the siege of Lucera, in southern Italy. Peregrinus's chief claim to distinction, in Prof. Thompson's opinion, was his invention of improved forms of the compass. One form, like earlier compasses, was floated in water, but it was the first to possess the equivalent of a "lubber" line and a divided circle. A second form was pivoted, and may be regarded as the precursor of the azimuth compass. An even more curious instrument, which, though illustrated, was presumably never materialised, was to consist of a light pivoted circle, having a number of inwardly directed iron teeth, with a fixed lodestone at its centre. Peregrinus's hope was to secure perpetual motion. There seems here almost an anticipation of one idea at least embodied in the dynamo, but Prof. Thompson is too experienced a writer to enter on this theme with an audience where his remarks would be liable to misconstruction. The discovery of the declination of the compass from true north has been ascribed by some to Peregrinus, but this Prof. Thompson says is a mistake, arising from a spurious addition made to a Leyden MS. of the "Epistola" about the end of the fifteenth century. In Appendices A and B Prof. Thompson enumerates the various MSS. and printed versions of the "Epistola." Of the twenty-eight MSS. enumerated, it is surprising to find that no fewer than twelve are in libraries situated in the United Kingdom, seven being in the

Bodleian and two in Prof. Thompson's own possession. Some of the scientific aspects of Peregrinus's work received a somewhat fuller treatment recently at the hands of Dr. L. A. Bauer (U.S. Coast and Geodetic Survey's "Magnetic Declination Tables and Isogonic Charts," 1902, pp. 16–20), but the present discussion is much more complete on the literary side.

THE magazine of photographic art known as the *Practical and Pictorial Photographer*, so ably edited by the Rev. F. C. Lambert, was until quite recently published by Messrs. Hodder and Stoughton. This monthly has now been acquired by Messrs. Robert Atkinson (London), Ltd., and will in future be published at their offices in 70, Essex Street, Strand. From the editorial notes it is gathered that some changes have been contemplated in the new issues, and the March and April numbers point out the direction in which such alterations have been made. The modifications include an attempt to issue the publication on the first of each month; one long or a collection of small articles dealing with one subject in a comprehensive manner in each issue; a change in the inks and paper employed for the illustrations to secure more transparent and luminous shadows in the reproductions; a detachable card which deals with all the constant needs of the dark-room, such as standard developing formulæ for negatives as given in the March number. Another important innovation is the insertion of the text and a page of illustrations in connection with the great National Photographic Record Survey that is being so well taken in hand now all over the country. The reader will therefore gather that the future issues of this excellently illustrated magazine will have an added interest, and the March and April numbers should be seen to fully appreciate the changes made.

THE twelfth of a series of Bulletins published by the Engineering Experiment Station of the University of Illinois embodies a detailed report, by Prof. A. N. Talbot, on tests of reinforced concrete T-beams. The tests were made with the object of determining whether the width of the slab is a controlling element in the strength of the beam, and to ascertain the efficacy of vertical reinforcing stirrups in resisting web stresses.

IN the Journal of the Franklin Institute (vol. clxiii., No. 4) Mr. Persifor Frazer discusses the application of scientific methods to the study of handwriting, and shows that when the province of this study is recognised as within that of experimental psychology, entirely capable of being conducted like other investigations of the human faculties by exact measurement and numerical statement, the shallow pretenders who have from time immemorial infested it will disappear.

AN interesting account of the work of the United States Reclamation Service is given by Mr. C. J. Blanchard in the *National Geographic Magazine*, Washington (vol. xviii., No. 4). The vast expenditure on national irrigation is the outcome of an Act passed in 1902 which provided that the money received from the sales of public lands in fourteen arid States and two Territories should be used as a reclamation fund for the construction of the works necessary to irrigate arid lands in those regions. In the same issue Miss E. R. Scidmore reproduces twenty-five admirable typical illustrations, of great anthropological interest, of women and children of the Far East.

MESSRS. A. GALLENKAMP AND CO., LTD., have added to their "technical" series of physical apparatus ten useful pieces of apparatus which will greatly assist the practical study of heat. The catalogue describing the instruments shows how satisfactory results may be obtained and used to illustrate principles.

MR. EDWARD STANFORD announces for early publication a new edition of his "Geological Atlas," which will deal with Great Britain and Ireland in place of Great Britain alone as formerly. The maps and text have been revised, and among the new features is a full list of the figured fossils, with indications of their zoological position and range in time.

PART V. of Mr. Charles Stoneham's elaborate work on "The Birds of the British Islands" has been published by Mr. E. Grant Richards. The work will be completed in twenty parts, and its general character was described in a review of the first part in NATURE of October 18, 1906 (vol. lxxiv., p. 607). We shall notice the publication again when the whole of the parts have reached us.

MESSRS. W. AND A. K. JOHNSTON, LTD., have placed upon the market a form of their "world-wide sectional pad" which is likely to be of service to surveyors, military men, and others. The side of a small square represents a hundred yards, and intervals of a thousand yards are indicated by slightly darker ruling. The scale of the paper is such that a mile is represented by 1 inch. This form of sectional paper will prove useful to teachers of geography who exercise their pupils in the construction of simple plans. The price of the pad is 1*s*. 6*d*. net.

THE new catalogue of microscopical lenses and apparatus issued by Messrs. Voigtländer and Son, whose manufactory is in Brunswick, Germany, is conveniently arranged and beautifully illustrated. Mr. F. G. Phillips, 12 Charterhouse Street, Holborn Circus, E.C., is the sole agent for Great Britain and the colonies. The tabular arrangement adopted in the catalogue makes it easy at once to discover prices, sizes, and other particulars.

ATTENTION is frequently directed in these columns to the valuable preparatory work in observational science which is being accomplished by natural history and similar societies in the secondary schools of the country. An excellent instance of this useful work is provided by the seventy-third annual report of Bootham School (York) Natural History, Literary, and Polytechnic Society. In addition to the encouragement given to field work in natural science, the boys are afforded every facility to study the science of photography, are offered inducements to practise literary expression, and are provided with lectures on scientific subjects. The authorities are to be congratulated on the good year's work described in the report.

A "GUIDE to the Great Game Animals (Ungulata) in the Department of Zoology, British Museum (Natural History)," has been printed and published by order of the trustees of the museum. The guide has been compiled by Mr. R. Lydekker, F.R.S., and he has devoted the descriptive portion chiefly to the characteristics of the different genera and families. The scientific names employed in the guide are those adopted in the museum, and are, Prof. E. Ray Lankester points out in a preface, "to some extent a compromise between extreme views." The text is illustrated by fifty-three figures, most of which are printed from half-tone blocks. The guide, the price of which is one shilling, will provide the visitor with just the information necessary to enable him to take an intelligent interest in the exhibits.